

REMARKS

The Official Action mailed June 25, 2007, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for One Month Extension of Time*, which extends the shortened statutory period for response to October 25, 2007. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statement filed on April 16, 2007.

A further Information Disclosure Statement was submitted on June 14, 2007 (received by OIPE June 18, 2007), and consideration of this Information Disclosure Statement is respectfully requested.

Claims 1, 3, 11, 18, 26, 28, 32, 34, 37, 39, 42, 44, 45, 47, 50, 52, 53, 55, 58, 60, 69, 71, 74, 76, 77, 79, 82 and 83 are pending in the present application, of which claims 1, 3, 26 and 28 are independent. Claim 83 has been withdrawn from consideration by the Examiner (pages 13-14, Paper No. 20070621). Claims 1, 3, 11, 26 and 28 have been amended to better recite the features of the present invention. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 4 of the Official Action rejects claims 3, 34, 39, 71 and 79 as obvious based on the combination of U.S. Patent No. 6,975,386 to Tsumura, U.S. Patent No. 6,647,148 to Ozawa and U.S. Publication No. 2005/0041226 to Tanaka. The Applicant respectfully submits that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application, as amended.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Independent claims 1, 3, 26 and 28 have been amended to recite comparing a variance obtained from relations between an approximate line and average values with a reference value to evaluate crystallinity of a semiconductor film having the crystallinity that has been improved. The claims have also been amended to remove features which are not believed to be critical to the patentability of the claims. The Applicant respectfully submits that Tsumura, Ozawa and Tanaka, either alone or in combination, do not teach or suggest the above-referenced features of the present invention.

Also, claim 34 recites that an energy beam in the method for testing of claim 3 is a laser light. Claim 39 recites that visible light in the method for testing of claim 3 is irradiated from a light source selected from the group consisting of a metal halide lamp, a halogen lamp, a tungsten lamp, a xenon lamp, a light emitting diode, and a fluorescent lamp. Claim 71 recites testing each of a plurality of semiconductor films crystallized by an energy beam having a different density by the method for testing according to claim 3; and determining an irradiation energy density by a result of a test to crystallize the semiconductor film. Claim 79 recites that a means for photographing scattered light of the method for testing of claim 3 is provided in a crystallization chamber. The Official Action asserts that Tsumura teaches the features of claim 34 at

column 12, lines 16-18, the features of claim 39 at column 10, lines 57-62, the features of claim 71 at column 9, lines 48-57, column 11, lines 53-58, and column 12, lines 10-18, and some of the features of claim 79 at column 6, lines 53-54. The Applicant respectfully disagrees and traverses the assertions in the Official Action. Unlike the present invention, none of the above-referenced disclosures of Tsumura result in a method that enables crystallization with an optimal crystallization energy by feeding back the results tested by the methods recited in the present claims and described in the present specification (page 4, lines 16-19). Therefore, the Applicant respectfully submits that the prior art of record does not teach or suggest the features of claims 34, 39, 71 and 79, and, in particular, claim 71, which recites testing each of a plurality of semiconductor films crystallized by an energy beam having a different density by the method for testing according to claim 3; and determining an irradiation energy density by a result of a test to crystallize the semiconductor film.

Since Tsumura, Ozawa and Tanaka do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Furthermore, in the wake of the recent Supreme Court decision of KSR Int'l Co. v. Teleflex Inc., 127 S.Ct. 1727 (2007), the PTO's Deputy Commissioner for Patent Operations issued on May 3, 2007, a memorandum to all Technology Center Directors ("May 3, 2007 Memo") noting that "a showing of 'teaching, suggestion, or motivation' to combine the prior art to meet the claimed invention could provide a helpful insight in determining whether claimed subject matter is obvious under 35 U.S.C. § 103(a)." However, whatever test for obviousness may be employed, "the analysis supporting a rejection under 35 U.S.C. § 103(a) should be made explicit, and it [is] 'important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements' in the manner claimed." (May 3, 2007 Memo; emphasis added). Thus, the law still requires a reason for combining references (e.g., a

benefit), and that reason must have "rational underpinning to support the legal conclusion of obviousness." In re Kahn, 441 F.3d 977, 988 (Fed.Cir. 2006) (cited with approval in KSR, 127 S.Ct. 1727). Against this legal backdrop, the Applicant respectfully submits that the Examiner has fallen well short of their burden in making the pending obviousness rejections based on the combination of Tsumura, Ozawa and Tanaka.

There is no proper or sufficient reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Tsumura, Ozawa and Tanaka or to combine reference teachings to achieve the claimed invention. MPEP § 2142 states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. It is respectfully submitted that the Official Action has failed to carry this burden. While the Official Action relies on various teachings of the cited prior art to disclose aspects of the claimed invention and asserts that these aspects could be used together, it is submitted that the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the features of the present invention.

The test for obviousness is not whether the references "could have been" combined or modified as asserted in the Official Action, but rather whether the references should have been. As noted in MPEP § 2143.01, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis in original). Thus, it is respectfully submitted that the standard set forth in the Official Action is improper to support a finding of *prima facie* obviousness.

The Official Action concedes that Tsumura does not teach "how the image discriminator determines locations of the defects" (page 4, Paper No. 20070621). The Official Action relies on Ozawa to allegedly teach "a boundary line detecting method to determine areas with differences in light reflectance on a device surface ... comprising a

camera to take a photograph of reflected light ..., digitizing the photographed image to make a digital image ..., and calculating an average luminance of the digital image ... by a computer ..., sectioning basic units consisting of m rows and n columns by dividing the digital image into n in the X direction and m in the Y direction in a predetermined analysis range ..., calculating/testing average values of luminances of the n basic units aligned in the X direction per each of the m rows aligned in the Y direction ..., obtaining an approximate line from relations between the positions in the Y direction and the average values of the luminance corresponding to the positions in the Y direction, and testing the device surface using a fluctuation obtained from relations between the approximate line and the average values of the luminance" (pages 4-5, Id.). The Official Action asserts that "[it] would have been obvious ... to modify the invention of Tsumura to include the specifics on how the image discriminator determines locations of the defects, as taught by Ozawa" (page 5, Id.). The Applicant respectfully disagrees and traverses the above assertions in the Official Action.

Ozawa is not analogous to Tsumura and Tanaka. Ozawa is directed to an entirely different field of endeavor from the present application and Tsumura and Tanaka.

MPEP § 2141.01(a) states the following:

The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); In re Clay, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).

Specifically, Ozawa is directed to a positioning method of a magnetic head body for a hard disk drive, which is entirely irrelevant to Tsumura's method and apparatus to inspect a film quality of a polysilicon film and Tanaka's method of manufacturing a semiconductor device. Despite the Examiner's assertions at page 16 of the Official

Action, Ozawa is not, in fact, in the field of the Applicant's endeavor, is not reasonably pertinent to the particular problem with which the inventor is concerned, and would not have logically commended itself to an inventor's attention in considering the problem. Therefore, the Applicant respectfully submits that one of ordinary skill in the art at the time of the present invention would not have had a reason to combine Ozawa with Tanaka or Tsumura.

Also, Tsumura discloses "by combining inspection results at wavelength of 550 nm and 500 nm, it is possible to identify the crystal states accurately as sub-divided into the four regions" (column 10, lines 17-19) and that "regions 1, 2, 3 and 4 can be separated from each other" (column 12, lines 10-14). That is, the Applicant respectfully submits that one of ordinary skill in the art, upon reviewing Tsumura, would only use Tsumura's film quality inspecting method to identify crystal states accurately. One of ordinary skill in the art would not, upon reviewing Tsumura, recognize a need to identify crystal states more accurately or more finely. Therefore, the Applicant respectfully submits that one of ordinary skill in the art at the time of the present invention would not have had a reason to combine Tsumura with Tanaka or Ozawa.

Therefore, the Applicant respectfully submits that the Official Action has not provided a proper or sufficient reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Tsumura, Ozawa and Tanaka or to combine reference teachings to achieve the claimed invention.

In the present application, it is respectfully submitted that the prior art of record, either alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Paragraphs 5-11 of the Official Action reject claims 1, 11, 18, 26, 28, 32, 37, 42, 44, 45, 47, 50, 52, 53, 55, 58, 60, 69, 74, 76, 77 and 82 as obvious based on the combination of Tsumura, Ozawa, Tanaka and one or more of the following: U.S. Publication No. 2004/022856 to Lin, U.S. Publication No. 2003/0142298 to Ujihara, and U.S. Patent No. 6,861,614 to Tanabe.

Please incorporate the arguments above with respect to the deficiencies in Tsumura, Ozawa and Tanaka. Lin, Ujihara and Tanabe do not cure the deficiencies in Tsumura, Ozawa and Tanaka. The Official Action relies on Lin, Ujihara and Tanabe to allegedly teach the features of the dependent claims. Specifically, Lin is relied upon to allegedly teach various dividing and measuring functions, Ujihara is relied upon to allegedly teach an inspection method and system through inspection of a photographed image, and Tanabe is relied upon to allegedly teach formation of a silicon film and a semiconductor-insulating film interface (pages 6-12, Paper No. 20070621). However, Tsumura, Ozawa, Tanaka, Lin, Ujihara and Tanabe, either alone or in combination, do not teach or suggest comparing a variance obtained from relations between an approximate line and average values with a reference value to evaluate crystallinity of a semiconductor film having the crystallinity that has been improved; or a method that enables crystallization with an optimal crystallization energy by feeding back the results tested by the methods recited in the present claims and described in the present specification.

Also, Tsumura, Ozawa, Tanaka, Lin, Ujihara and Tanabe, either alone or in combination, do not teach or suggest that one of ordinary skill in the art would have had a reason to combine Ozawa, which is directed to a positioning method of a magnetic head body for a hard disk drive, with Tsumura's method and apparatus to inspect a film quality of a polysilicon film and Tanaka's method of manufacturing a semiconductor device.


Further, Tsumura, Ozawa, Tanaka, Lin, Ujihara and Tanabe, either alone or in combination, do not teach or suggest that one of ordinary skill in the art would have,

upon reviewing Tsumura, recognized a need to identify crystal states more accurately or more finely.

Since Tsumura, Ozawa, Tanaka, Lin, Ujihara and Tanabe do not teach or suggest all the claim limitations and since there is insufficient reason to combine Tsumura, Ozawa, Tanaka, Lin, Ujihara and Tanabe, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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